

14. A system for feeding cooling air to the rotor blades of a turbine in a gas turbine engine having a compressor for compressing air and a combustor for burning a mixture of pressurized air and fuel, comprising:

- means for bleeding air from an intermediate stage of said compressor;
- heat exchange means for transferring heat by conduction from a first fluid communication circuit to a second fluid communication circuit;
- means for supplying said compressor bleed air from an intermediate stage of said compressor to said first fluid communication circuit of said heat exchange means;
- means for supplying fuel having a temperature less than the temperature of said compressor bleed air to said second fluid communication circuit of said heat exchange means;
- means for circumferentially distributing said compressor bleed air from said first fluid communication circuit of said heat exchange means to an annu-

lar cavity surrounding a shaft by which said turbine rotor drives said compressor rotor; and means for impelling said cooled compressor bleed air radially outward, further increasing its pressure, through a plurality of hollow radial spokes to said rotor blades;

whereby said fuel is heated before being supplied to said combustor and said compressor bleed air is cooled and recompressed before being circumferentially distributed to said rotor blades.

15. The cooling air feed system as defined in claim 14, wherein said heat exchange means comprises a closed circuit containing an inert or nonflammable fluid medium, said closed circuit having a first portion in heat exchange relationship with said compressor bleed air in said first fluid communication circuit and a second portion in heat exchange relationship with said fuel in said second fluid communication circuit.

16. The cooling air feed system as defined in claim 14, further comprising means for enabling said compressor bleed air to bypass said heat exchange means when the flow rate or temperature of said fuel reaches a predetermined threshold.

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